

at stated times. This would also enable us to ascertain whether the carbonate existed in the water, or whether it was formed during the evaporation, by the action of the lime or other earths. The presence of magnesia, of potash, and of iodine also remains an undecided point, as well as the nature of the pink or amethystine colouring matter remarked in some of the specimens (A No. 24).

To conclude this hasty note, I may mention that I have found M. GAY LUSSAC'S alkalimeter a very convenient instrument for examining these mixed salts. By preparing three standard bottles of dilute nitric acid, nitrate of barytes, and nitrate of silver, adapted to his centesimally-divided dropping glass, the per centage of carbonate, sulphate, and muriate, is obtained successively from the same specimen with great ease and rapidity.

J. P.

X.—*Remarks on a collection of Plants, made at Sadiyá, Upper Assam, from April to September, 1836. By WILLIAM GRIFFITH, Assistant Surgeon, Madras Establishment, on duty in Upper Assam.*

The following remarks may not be uninteresting, as they concern a portion of India of which, especially so far as regards its natural productions, but little is known. I must beg, however, to point out that they must be considered as outlines only of a slight sketch; since the amount of plants collected in *Assam* does not probably exceed 1,500, and this can scarcely be considered more than one-fourth of its whole Flora.

The greater portion of *Assam* that I have seen, may be compared to an extensive plain, intersected in various manners by belts of jungle, the breadth of which, although extremely variable, does not, except towards the hills enclosing the valley, seem to be often very great. But as we approach towards the eastern boundary, the spots unoccupied by jungle become fewer and less spacious: so that between *Kujoo Ghat* on the *Noa Dehing*, and *Nungroo* on the *Booree Dehing*, and in the whole of that direction, the country is almost exclusively occupied by jungle. The characters of a plain intersected by narrow belts of jungle is very obvious about *Sadiyá*, at which place the collection was almost entirely formed.

The peculiar feature of *Assam*, especially its lower and central divisions, consists in the vegetation of its churs, or tracts of sand, very often of great extent, which are stretched along the *Burhampootur*. The breadth of these tracts, taken together, is, in some places, from 8

to 10 miles. They may be said to be throughout their whole extent exclusively clothed with dense grass jungle.

Up to *Rungpoor* the eye meets nothing but grasses, and an occasional *Bombax*, a tree remarkable for its ramification, the branches being nearly approximated in whorls, and forming right angles with the trunk. About *Buggooa Mookh* belts of jungle begin to appear, here and there approaching to the banks of the river. From this place upwards the belts increase in extent and number, and from *Seloni Mookh*, just below the confluence of the *Dihong* with the *Burhampootur* to *Sadiyá*, they preponderate much over the grassy tracts. Above *Sadiyá* these tracts recommence at least on the northern bank, but they disappear soon entirely: the grasses that clothe the churs are, especially throughout Lower and Central *Assam*, of gigantic size, some of them often measuring 20 feet in height. They consist of four or five species of *Saccharum*, the kuggra, mog, (white,) molaha, (red) and telee, (blackish,) of the Assamese, and a species of *Arundo*, which is perhaps the longest of all, the nul (or podomolee*) of the natives. Towards *Sadiyá*, however, very large tracts are covered with *Imperata Cylindrica*, the *ooloo-kher* of *Assam*, which grows to the height of 5 to 7 feet. As the genus *Saccharum* far preponderates over the others, and is perhaps during its inflorescence one of the most conspicuous genera of the order, the appearance presented by the churs during the flowering of their occupants, can be more easily conceived than described.

It may perhaps be convenient to consider the botany of *Assam* under the following heads.

I. Botany of the *Burhampootur*, including the churs.

Of these, *Gramineæ* form, as I have said, almost exclusively the Flora. Of the immediate banks, the predominant order is,—*Compositæ*, *Polygoneæ*, *Scrophularinæ*, *Gramineæ*, (among which is a species of *Alopecurus*,) *Boraginæ*, have several representatives: from *Jorháth* upwards to *Diboroo Mookh*, a large annual *Ranunculus* occurs extensively, and throughout the same distance large patches not uncommonly occur of a species of *Irematodon*, (*I. sabulosus, mihi*,) a species of *Polentilla* is also not uncommonly met with.

II. Botany of the plains.

Predominant plants, *Gramineæ*; of these the most common about *Sadiyá* are *Imperata cylindrica*, *Saccharum spontaneum*, *Saccharum fuscum* (Roxb.) in wet places, and a probably new, large and coarse species of *Panicum*. Among these may be found two or three *Orchidæ*, *Polygoneæ*, *Leguminosæ*, *Cyperaceæ*, one *Viola*, and a species of *Exacum* which is particularly conspicuous from its bright blue flowers.

* See BUCHANAN'S *Dinájpur*, p. 168.—ED.

Those parts of the plains which have at a previous period been cleared for cultivation, but are now unoccupied, present the usual tropical features; and are occupied chiefly by Cyperaceæ, among which occur one or two Gramineæ, several annual Scrophularineæ, and small Alismaceæ.

III. Botany of the belts of jungle.

IV. Botany of the foot of the boundary hills.

On this last I am not able to offer any remarks. It will be found excessively rich in ferns, and next to these perhaps in Cyrtandraceæ. The only opportunity that has hitherto been allowed me of visiting any portion of these boundaries above *Gawahattí*, occurred at *Gubroo Purbut*; and I was then fortunate enough to meet with an *Alsophila* 30 feet high, a *Sollyana*, (*mihi*), and *Kaulfussia Asamica*. Of the third division, the botany is very varied; so much so, that no one prominent feature seems to present itself. It is to this section that by far the greater number of species contained in the collection will be found to belong; and I shall hence pass in review the orders composing it—reserving the few observations I have to make on the most interesting plants to a subsequent part of this paper.

To those orders, the presence of which indicates the climate of northern latitudes, or of a tropical one at considerable elevations, I have appended an asterisk; and to those which, though usually tropical, include plants which have hitherto only been found at comparatively high elevations, I have appended a cross.

Dicotyledones.

*Ranunculaceæ,	3	Dipterocarpeæ,	2
*Magnoliaceæ,	1	Tiliaceæ,	5
Anonaceæ,	6	Elæocarpeæ,	1
*Umbelliferæ,	7	Lythariæ,	1
Araliaceæ,	3	Meliaceæ,	8
Ampelideæ,	15	Aurantiacæ,	7
Onagrariæ,	1	Rhamnæ,	5
Loranthæceæ,	1	Euphorbiaceæ,	15
Alangiæ,	1	Hippocrateaceæ,	1
Melastomaceæ,	5	Malpighiaceæ,	2
Memecyleæ,	2	*Conariæ,	1
Myrtaceæ,	4	Tranthoxylex,	5
Cucurbitaceæ,	12	Balsamineæ,	5
Begoniaceæ,	1	Casyophyllex,	4
*Cruciferæ,	3	*Rosaceæ,	6
Capparideæ,	3	Leguminosæ,	41
*Violariæ,	2	Connaraceæ,	2
Guttiferæ,	2	*Cupuliferæ,	2
*Temstræmiaceæ,	3	Urticæ,	24
Sapindaceæ,	3	Artocarpeæ,	18
*Hippocastanæ,	1	Stilagineæ,	2
Herculiaceæ,	1	*Chloranthæ,	1
Bythneriaceæ,	1	*Saurureæ,	1
Malvaceæ,	4	Piperaceæ,	5

*Thymeleæ,	1	Acanthaceæ,	8
Proteaceæ,	1	Scrophularinæ,	20
Laurinæ,	6	Orobanchæ,	1
Amaranthaceæ,	5	Compositæ,	39
†Polygonæ,	12	*Plantaginæ,	1
†Menispermeæ,	19	*Gentianæ,	1
*Primulaceæ,	1	Apocynæ,	8
Myrsinæ,	6	Asclepiadæ,	9
Styraceæ,	3	Oleinæ,	5
Convolvulaceæ,	6	Jasminæ,	2
Rubiaceæ,	36	*Boraginæ,	3
Lobeliaceæ,	1	Cordiaceæ,	1
*Campanulaceæ,	2	Ehreliaceæ,	4
*Sambuceæ,	1	Solanæ,	6
*Viburnæ,	2	Gnetaceæ,	1
Cyrthandraceæ,	7	Incertæ sedis, including Roydsia,	31
Verbenaceæ,	11		
Labiatae,	14		
		Total, ..	523

Monocotyledones.

Scitamineæ,	9	*Juncæ,	2
Cannæ,	1	Palmæ,	3
Hypoxidæ,	1	Tupistra,	1
Amaryllidæ,	1	†Butomæ,	1
Hydrocharidæ,	1	Alismaceæ,	10
Arordeæ,	3	Eriocaulonæ,	1
†Smilacæ,	7	Graminæ,	37
Dioscoreiæ,	2	Cyperaceæ,	28
Ponledereæ,	2		
*Orchidæ,	15		
Polamogeton,	1		
		Total, ..	126

Acotyledones.

Equisetaceæ,	1	Filices†,	34
Lycopodiaceæ,	5		
		Total, ..	40

Of *Anonaceæ* I shall only notice *Sphorostemma*, BLUME. In this genus the connectivum is highly dilated, and the cells of the anther at a considerable distance from each other; and yet from the arrangement of the stamina, bilocular anthers with contiguous loculi result.

It affords another instance of the existence of the peculiar tissue, until lately supposed to be characteristic of *Gymnospermæ*. In addition to this singularity, its medulla is traversed longitudinally by bundles of dense, occasionally branched, woody fibre, which consists of a superposition or "emboitement" of several layers.

Cucurbitaceæ. Among these plants occur two genera which appear to be new, so far at least as the *Prodromus* of M. DE CANDOLLE is concerned; in which book the article on *Cucurbitaceæ*, (by M. SERINGE,) appears to me to be very unsatisfactory. Of one of the above genera, I have only seen the male; it is remarkable for the involute, or rather gyrate involution of the petals. The second I propose calling *Actinos-temma*: it is chiefly remarkable for the complete separation of its sta-

† Chiefly from the foot of the Abor Hills, on the *Dihong*.

mina; for the "dehiscencia circumcisa" of the fruit; and, above all, for the pendulous direction of the seeds. It approaches in some points to *Zanonia*. I am not aware whether the peculiar nature of the arillus of this order has been explained or not; it is a separation of that portion of the tissue originally surrounding and in close contact with the ovula. Hence it is a shut sac; and hence, too, it is wanting in *Actinostemma*, in which the cavity of the ovarium is not filled by a production from the placentæ.

Conaria. In *Conaria*, of which I have one species from the Abor Hills, the raphe is certainly external with regard to the axis. I have not been able to ascertain whether this depends upon any torsion of the funiculus, which Mr. BROWN has stated to be the case in other instances of a similar anomalous situation.

Of *Saurureæ* *Houttuynia* is the only example. This plant, which was originally described by THUNBERG, appears latterly to have been more misunderstood than by the original describer. I have had no opportunity, however, of examining the work of THUNBERG in which the plant is described. And I ought, perhaps, to except M. MEYER, who has published "De *Houttuynia* atque *Saurureis*," with which work I am unacquainted. I find each flower throughout the spike, except perhaps the terminal one, to be subtended by a very small bracte. Of these, the four lowermost, rarely only three, are highly developed and petaloid, forming the spatha.

The number of stamina to each flower is, excepting those at the apex of the spike, almost invariably three, and always equal to the carpella entering into the formation of the female organ; and of these the third is always next the axis. The terminal flower has from five to seven stamina; the space between this and the uppermost triandrous hermaphrodite (?) flowers is occupied by an assemblage of male flowers, with a variable number of stamina, but never greater than three, and usually, I think, two. That such is the structure of this portion is proved by the presence of bractea, similar to those of the lower portion, interspersed among the stamina. Dr. WALLICH says, in *Flora Indica*, I. 362—"In the numerous spadices which I have examined, I have with Father LOUREIRO invariably found three stamens, and as many styles attached to each ovarium: the former above the base, the latter at the apex of its angles. I have not, therefore, hesitated continuing this most interesting plant in the very class and order where it has been placed in the *Flora* of *Cochinchina*. As there is no reason for considering it at all different from the original *Japan* plant, I am at a loss to account for the difficulty which the celebrated Chevalier THUNBERG experienced in determining its

station in the sexual system; nor can there be at present any doubt of its neither belonging to Heptandria, Polyandria, or Monæcia." THUNBERG was, however, so far as I can see, right; for he paid, in all probability, exclusive attention to the composition of the terminal flower, on which, in certain cases, the Linnæan rules lay much stress. Taking this into consideration, Houttuynia may be referred to Heptandria, Polyandria, or Monæcia; most correctly to the latter, and least correctly to Polyandria. But as,—so far at least as regards the Linnæan system,—the most obvious characters are the best, it is advisable to keep the plants still in Triandria Trigynia. The structure of the seed has been likewise totally mistaken. In the Flora Indica, loc. cit. the embryo is placed at the wrong end of the albumen, and is mistaken for the embryonary sac. The real embryo is a much more minute organ contained in this, "the vitellus," or membrane of the amnios of Mr. BROWN. Dr. HOOKER describes Dr. WALLICH'S account as most correct; but he does not define the situation of the embryo otherwise than by saying that it is situated at one end of the seed. Lastly, the plant does not belong to Aroideæ, nor even to Monocotyledones. Notwithstanding the apparent solidity of true embryo, yet the more important nature of the structure of the stem is sufficient to point out that it is Dicotyledonous, or rather Exogenous; and among these, its true place is, beyond doubt, Saurureæ.

Of *Thymelex* one species only occurs, which is apparently referrible to no published species of the order. To this I have attached the MSS. name of JENKINSIA, in compliment to Captain F. JENKINS, Agent to the Governor General on the North-East Frontier, to whom Botany, among other sciences, is considerably indebted.

Of *Menispermeæ* the majority are interesting. *Cissampelos* is the only genus with which I am acquainted, in which the ventral suture of the ovarium is anticous, or not next the axis. I am not certain whether the most correct way of understanding the curious structure of the female flowers is not to assume the aggregation of four flowers, which, in the only species I have examined, appears constant, as a complete quaternary division of one only. It remains to be ascertained whether the singular reversion of the situation of the ventral suture is more uncommon in aggregate than in solitary carpella.

Of the genus *Stauntonia*, Assam has two species, but only one is contained in my collection. The anomalous structure of the fruit has no doubt been explained by Dr. WALLICH in his Tentamen Floræ Nipalensis, in which it is published under the name *Holböllia*, but which I am at present unable to consult. I find that the placentation of this genus is similar to that of *Flacourtianææ*, with which

order I am not acquainted, and to that of Butomeæ; and hence the anomalous situation of the seeds. At the period of expansion of the flower, the ovula are much less developed than is almost universally the case: they present indeed the appearance of ovula at the earliest stages of development. I refer to this order a plant with long racemes of ternarily aggregate fruits, notwithstanding that it has milky juice, and that the Cotyledons are large, foliaceous and obliquely situated with regard to each other.

Among the *Cyrthandraceæ* a species occurs, (*Chiliandra obovata*, mihi,) remarkable for the structure of its mature anthers. These dehisce in a labiate and incompletely bivalvular manner, the lower and smaller valve being alone half reflexed. This valve is compound, and due to the mutual adhesion of the originally distinct inner locellus of each loculus. To this formation I have adverted in a short memoir on Rhizophoreæ, published in the Transactions of the Medical and Physical Society of Calcutta, although I was at the time ignorant of the existence of an example. *Assam* contains another interesting species of this family: this, which is remarkable for its pentangular petaloid calyx, and the "dehiscencia circumcisa," of its fruit, in which it approaches to *Aikinia* of Mr. BROWN, I propose calling *Cyananthus*.

Scrophularianeæ afford one new genus, (*Synphyllium torenioides*, mihi,) an account of which will appear in the Journal of the Madras Literary Society, edited by my friend Mr. COLÈ.

Asclepiadeæ contain some interesting species, of which one constitutes probably a new genus, unless, indeed, it is referrible to Dr. WIGHT's *Heterostemma*, from which it would appear to differ in the valvular æstivation of the corolla. This species is remarkable for the aliform processes running along the larger veins of the under surface of the leaves.

To this order, or to Apocyneæ, is to be referred a remarkable plant, distinguished by the numerous longitudinal foliaceous alæ of its follicles, and, I speak from memory, its serrated leaves. This plant, which I have seen near *Mergui* on the *Tenasserim* coast, seems to have been sent by Captain JENKINS to Dr. WALLICH with many others, none of which appear, however, to have excited much attention.

Among the *Boragineæ* we find one *Myosotis* and a species which, with the habit of some *Anchusæ*, appears to be not referrible to any genus of the order. The "umbilicus" occupies the centre of each carpellum, and is surrounded by an osseous elevated margin. The origin of this is totally distinct from that of *Myosotis*, and is wholly independent of fecundation. The radicle is in addition inferior.

The Monocotyledonous forms are chiefly those of other parts of India. Among the *Orchideæ* two species of *Calanthe*, and two of *Pogonia* occur, as well as one species of *Spiranthes*. Among the *Graminæ* the most interesting is a Diandrous species of *Alopecurus*, which genus is, I believe, new to India; at least to any portion of the plains.

Of the *Cyperaceæ*, I shall only advert to the existence of four species of *Carex*, two of which are, however, from the Abor Hills; a third, which was originally sent by Captain JENKINS to Dr. WALLICH, appears to be widely distributed, extending from *Gawahatí* to *Jorháth*; the fourth; I have only met with about *Sadiyá*.

But perhaps the most interesting plants of the whole collection are contained among those "incertæ sedis," a division, always to a beginner, of great extent. Most of these are from the lower ranges of the Abor Hills; and the appearance of these is quite sufficient to ensure their being of great interest.

XI.—*Note on a Remnant of the Hun Nation.* [Vide Chap. 26 of the "Decline and Fall of the Roman Empire" under the head of "Original Seat of the Huns."] By Captain W. FOLEY.

"One of the princes of the nation (*Hun*) was urged by fear and ambition to retire towards the south with eight hordes, which composed between forty and fifty thousand families; he obtained under the title of 'TANJOU' a convenient territory on the verge of the Chinese Empire." (A. D. 48.)

Now, there are a people located in various parts of the *Bama* (Burmese) and *Shan* (Siamese) empires, who are distinguished by the appellation of "*Ton-soo*" or "*Ton-dzoo*:" they have a language of their own, and differ in feature, dress, and domestic manners from the inhabitants of the country in which they reside; they never intermarry with their neighbours, and assert their descent from "a people who came from the north;" they are an ugly, swarthy race; both men and women closely resembling the picture of the *Huns* drawn by GIBBON in his immortal history. Broad faces, flat noses, small eyes, short, squat (but athletic) figures, are the most prominent beauties. The men wear their hair long in common with the *Bama*, but their dress, which is always of a dark colour, much resembles the garb of the Chinese: the women have a fillet of dark-coloured cloth (generally with a red or white border) tastefully arranged as a head-dress, and falling down over the back; a mantle of the same colour and material extending from the shoulders to a little beyond